

WHAT IS CLAIMED IS:

1. A negative active material for a rechargeable lithium battery

comprising:

a core including crystalline carbon, amorphous carbon or a mixture

thereof; and

a carbon shell formed around the core, the carbon shell including amorphous carbon with a metal selected from the group of consisting of a transition metal, a semi-metal, an alkali metal and an alkali earth metal.

2. The negative active material of claim 1 wherein the negative active material has at least one shoulder at 700°C or more in differential thermal analysis.

3. The negative active material of claim 1 wherein the transition metal is selected from the group consisting of Ni, Co, Fe, Mo and Cr; the semi-metal is selected from the group consisting of B, Al, Ga, Si, and Sn, the alkali metal is selected from the group consisting of Na and K; and the alkali earth metal is selected from the group consisting of Mg and Ca.

4. The negative active material of claim 1 wherein the amount of the metal is 0.1 to 25 wt % of the core.

5. The negative active material of claim 1 wherein the core has a planar distance of d_{002} of 3.35 to 3.7 Å of an X-ray diffraction plane distance at a (002) plane.

6. A negative active material for a rechargeable lithium battery comprising:

5 a core including secondary particles, the secondary particle being prepared by agglomerating at least one primary particle of a crystalline carbon, an amorphous carbon or a mixture thereof; and

a carbon shell formed around the core, the carbon shell including amorphous carbon with a metal selected from the group of consisting of a transition metal, a semi-metal, an alkali metal and an alkali earth metal.

7. The negative active material of claim 6 wherein the negative active material has at least one shoulder at 700°C or more in differential thermal analysis.

10 8. The negative active material of claim 6 wherein the transition metal is selected from the group consisting of Ni, Co, Fe, Mo and Cr; the semi-metal is selected from the group consisting of B, Al, Ga, Si, and Sn, the alkali metal is selected from the group consisting of Na and K; and the alkali earth metal is selected from the group consisting of Mg and Ca.

15 9. The negative active material of claim 6 wherein the amount of the metal is 0.1 to 25 wt % of the core.

10. The negative active material of claim 6 wherein the core has a planar distance of d_{002} of 3.35 to 3.7 Å of an X-ray diffraction plane distance at a (002) plane.

20 11. A method of preparing a negative active material for a rechargeable lithium battery, comprising the steps of:

mixing an amorphous carbon precursor with a compound including a metal selected from the group consisting of a transition metal, a semi-metal, an

alkali metal and an alkali earth metal;

adding the mixture to an organic solvent to prepare an amorphous carbon precursor solution; and

coating a crystalline carbon, an amorphous carbon or a mixture thereof with the amorphous carbon precursor solution.

12. The method of claim 11 wherein an agglomerating step is further performed with the coating step at substantially the same time.

13. The method of claim 11 wherein the coating and agglomerating step is performed by mixing-agglomerating the core with the amorphous carbon precursor solution, spray-drying or spray-pyrolyzing the amorphous carbon precursor solution onto the core, or freeze-drying the amorphous carbon precursor solution to the core.

14. The method of claim 13 further comprising a carbonizing step of the coated crystalline carbon, amorphous carbon or a mixture thereof.

15. The method of claim 14 wherein the carbonizing step is performed at 800 to 1500°C.

16. The method of claim 14 further comprising a neutralizing or stabilizing step prior to the carbonizing step.